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PAUD Educators' Knowledge of the Project-Based Learning Model in Jabodetabek

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ABSTRACT

The project-based learning model prioritizes a child-centered approach to education, empowering children to engage in in-depth exploration of the subject matter. The project's progression typically encompasses three distinct phases: project initiation, investigation, and conclusion. The purpose of this study was to describe PAUD educators' knowledge of project-based learning. The research method employed in this context is qualitative research, which involves the collection of data through interviews, filling out Google Forms, and the analysis of documentation. The data were analyzed through data reduction, data presentation, and formulation of conclusions. A subsequent analysis of the data revealed that the level of knowledge regarding the project learning model among PAUD educators was classified as high. This finding indicated that 50% of the educators were familiar with the project learning model and had incorporated it into their instructional practices. Additionally, 44.4% of the educators acknowledged the model but did not actively implement it in their teaching. In the context of PAUD units, learning occurs. A total of 5.6% of participants are classified as "low" in this category, indicating a lack of familiarity with the designated project learning model. The comprehension of the project learning model that has been implemented based on the knowledge of PAUD educators is in the medium category. This phenomenon is evident during the planning, phase, and duration of project activities. It is hoped that PAUD educators will receive training on project learning models in a practical form so that they can be applied in their respective institutions.

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1. INTRODUCTION

The development of knowledge and technology has profoundly transformed global societal structures. Numerous transformative events have occurred since the First Industrial Revolution (Industry 1.0), which was characterized by industrial dominance and the utilization of steam power to accelerate production processes. The Second Industrial Revolution (Industry 2.0) was marked by the widespread adoption of electricity as a primary energy source, accompanied by significant advancements in transportation infrastructure that facilitated the rapid distribution of goods. Subsequently, the Third Industrial Revolution (Industry 3.0) introduced the proliferation of computers, the Internet, robotics, and telecommunications, all of which substantially enhanced efficiency and simplified complex human tasks. Today, the Fourth Industrial Revolution (Industry 4.0) is defined by exponential technological growth, particularly in artificial intelligence, supercomputing, advanced engineering, genetics, nanotechnology, and autonomous vehicles. These technological advancements carry profound implications for the future of education in the 21st century, presenting both significant challenges and unprecedented opportunities.

One of the primary challenges of education in the Industry 4.0 era is to enhance students' competencies in alignment with 21st-century learning and innovation skills. These competencies are widely recognized as the 4C skills, which encompass communication, collaboration, critical thinking, and creativity. Such skills are essential for every learner to effectively navigate and respond to the rapid technological advancements characteristic of the Fourth Industrial Revolution. The continuous evolution of technology demands individuals who are not only technologically literate but also capable of higher-order thinking and adaptive problem-solving. Strengthening these competencies requires a curriculum approach that provides meaningful and challenging learning experiences tailored to the diverse needs and abilities of students. In this context, teachers may consider implementing a project-based learning approach, which emphasizes active engagement, collaboration, and real-world problem-solving as central components of the learning process.

The Project Approach is a curriculum component that can engage and motivate diverse learners to participate actively and persist in both social and academic learning activities (Beneke and Ostrosky, 2015). According to Mallewai (2019), project-based learning involves an in-depth, child-initiated, extended, and hands-on investigation of a particular topic conducted collaboratively by a group of children. A project typically unfolds in three phases (Mallewai, 2019). In Phase 1, the topic is introduced, and children explore their prior experiences and existing knowledge related to the topic. They generate questions orally and express their curiosity through discussion and action. In Phase 2, children engage actively in investigating the topic through various exploratory activities. In Phase 3, they reflect on and summarize what they have learned, culminating in a concluding or peak event that showcases their learning outcomes. Throughout the project, children articulate their understanding of the topic through discussions, two- and three-dimensional representations, and dramatic play. This perspective aligns with Irman *et al.* (2016), who argue that the emphasis of project-based learning lies in learners' active engagement in producing a product by applying research, analytical, and creative skills, as well as presenting the final learning product based on authentic experiences. Since project-based learning is initiated by learners, it provides opportunities for them to undertake activities that build on their strengths and align with their developmental readiness. Consequently,

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this approach is expected to facilitate the achievement of targeted competencies. This study aims to examine the knowledge of PAUD educators regarding project-based learning.

Project approach is a curriculum framework rooted in the progressive education movement in the United States and influenced by the Plowden Report in the United Kingdom. Many education scholars acknowledge John Dewey's work at the Laboratory School of the University of Chicago (1896–1904) as foundational in articulating the principles that later became known as the Project Approach. Indeed, the project method emerges as a central component of the progressive education movement. Smith (1997) notes that in the United States, professional interest in project work re-emerged during the 1960s and 1970s, when early childhood educators and administrators visited infant schools in England, where project work constituted an integral part of the curriculum. In 1967, an influential report on Primary Education in the United Kingdom, issued by the Central Advisory Council for Education and widely known as the Plowde Report, reaffirmed the importance of child-centered education, flexibility in responding to children's interests, and integrated learning, hallmarks of project-based work (Burke, 2022).

The Project Approach, also known as project-based learning, refers to an in-depth investigation of real-world topics. This instructional strategy is designed to help children develop a more comprehensive understanding of the world around them (Bell, 2010). Through collaborative projects, children engage in investigation and explore various methods for representing newly acquired information. When children study a topic in depth, they naturally apply language and mathematical skills as they construct new understandings across content areas, including knowledge domains and social studies. By integrating multiple disciplines within meaningful contexts, the Project Approach fosters active learning and supports the holistic development of children's cognitive and social competencies.

A project involves an in-depth investigation of a specific topic that strongly captures children's interest. During the process, children engage in careful observation, systematic inquiry, and detailed exploration (Potvin and Hasni, 2014). The duration of a thematic unit or project depends on the needs and interests of the children, as well as on how the topic is structured. Some thematic units and projects may last only one or two weeks; however, most extend over a longer period. The less prior experience children have with a particular concept, the more time they require to explore and understand it meaningfully (Zamel, 1983). A one-week thematic unit is generally too brief to move beyond a superficial survey of information. A limited time frame restricts children's opportunities to engage deeply with a topic, conduct personal investigations of the underlying concepts, and construct new understanding. Extended project work, therefore, provides the necessary temporal space for sustained inquiry and meaningful learning.

A project can be defined as a follow-up study of a topic that is typically conducted by a small group of children, although it may also involve the entire class or be undertaken individually. Such studies constitute systematic investigations into various aspects of a topic that is of interest to the participating children and is considered worthy of exploration by their teacher. By engaging in these investigations, children actively construct knowledge through inquiry, collaboration, and reflection within meaningful learning contexts.

The Project Approach has been selected as a guiding framework for implementing a new curriculum that emphasizes the exploration of questions derived from children's interests, daily experiences, and real-life contexts. Although the Project Approach is not exclusively designed for science instruction in PAUD, it provides a structured framework for integrating multiple domains of knowledge as well as scientific and engineering practices identified in the Next Generation Science Standards (NGSS). Furthermore, it facilitates a coherent

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transition from early childhood education to the expectations outlined in the NGSS. In line with this perspective, Beneke and Ostrosky (2015) argue that the Project Approach is a curriculum component capable of engaging and motivating diverse learners to actively participate and remain focused in both social and academic learning activities.

In general, activities typically included in project work involve gathering information through direct observation, conducting interviews with relevant experts, carrying out investigations related to specific subtopics of interest, collecting artifacts, and preparing visual and oral reports to present findings (Chin and Chia, 2006). Through such processes, children develop the ability to document information, take notes, and communicate their findings effectively, as they are actively engaged in investigating real-world phenomena within their own environment. This active involvement not only strengthens their inquiry skills but also enhances their capacity for reflection, analysis, and meaningful knowledge construction.

Project work and systematic instructions can be viewed as complementary in several ways. First, systematic instruction supports children in acquiring foundational skills, whereas project work provides opportunities to apply those skills in meaningful and authentic contexts. Second, systematic instruction enables teachers to address children's learning gaps, while project work builds upon and capitalizes on children's existing strengths. Third, systematic instruction typically involves teacher-directed learning, in which tasks are structured and sequenced based on the teacher's professional expertise regarding how skills are most effectively learned. In contrast, project work allows children to make their own choices and decisions about the tasks they undertake, including selecting levels of difficulty that align with their comfort and readiness. Fourth, in systematic instruction, learners may assume a more passive and receptive role. Conversely, in project work, children are actively engaged in investigation, knowledge application, decision-making, and problem-solving across all aspects of the learning process (Hunter *et al.*, 2007). Furthermore, the Project Approach provides opportunities and challenges for children to think deeply, solve problems through multiple steps, and express personal perspectives as integral components of competency development (Burns and Lewis, 2016).

The Project Approach can be regarded as an important element of the early childhood curriculum when implemented as part of educational programs for children approximately three to eight years of age. Within this framework, project work functions in a complementary relationship with other components of the early childhood curriculum. It should not be understood as a comprehensive teaching method or an all-encompassing instructional model. Rather, the Project Approach operates alongside other pedagogical practices that support young children's learning and development. Therefore, it does not seek to replace or cover all other educational practices within early childhood education but instead enriches and strengthens the overall curriculum framework.

There are several benefits of the Project Approach for children:

1. Children in early childhood education are introduced to and provided with opportunities to engage in investigative activities as an integral part of classroom learning (Gillies and Ashman, 1996).
2. The primary aim of project work is to engage children's thinking processes, including the development of their aesthetic awareness, moral understanding, and broader intellectual capacities.
3. Young learners are directly involved in making decisions about the focus of topics, formulating research questions, determining investigative processes, and selecting culminating activities. When children assume an active role as agents in the learning

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process, they are more likely to feel competent and capable of learning, thereby fostering self-confidence and a positive sense of self-worth.

4. The integration of project work into the curriculum helps ensure that knowledge construction and skill acquisition occur alongside the development of learning dispositions. In principle, incorporating project work supports the balanced and simultaneous achievement of four major categories of learning goals: knowledge, skills, dispositions, and feelings.

The Project Approach is a pedagogical practice that has evolved from various theoretical foundations proposed by prominent scholars such as John Dewey, Jean Piaget, and Lev Vygotsky. In the United States, the implementation of project work is most frequently associated with John Dewey's educational philosophy. Several of Dewey's writings provide a foundational understanding of the theoretical principles underlying the structure, strategies, and methods of the Project Approach (Polman and Pea, 2001). His work also offers practical guidance for the implementation of project-based learning, including the role of the teacher, the selection of topics, the involvement of experts and field visits, and the use of authentic artifacts within project work. Collectively, these theoretical perspectives emphasize active learning, social interaction, and meaningful engagement with real-world contexts as central components of effective educational practice.

John Dewey introduces the concept of education through *experiential learning*, emphasizing that meaningful education is acquired through experience. This concept forms a foundational basis for the implementation of the Project Approach in educational practice. Project work provides experiential learning opportunities for both children and teachers. It is grounded in the strong belief that learning by doing is essential and constructive, particularly when conducted collaboratively. Moreover, reflecting on ideas and experiences is regarded as a primary method for achieving deeper understanding and meaningful learning. Dewey's (1899) description of early childhood characteristics further provides a theoretical foundation for project work. He identified what he referred to as children's "available impulses" when they enter school: the social impulse (empathy instinct), the constructive impulse (instinct to make), the investigative impulse (inquiry instinct), and the expressive impulse (artistic instinct) (Goldblatt, 2006). The social instinct is evident in children's desire for conversation, interpersonal relationships, and communication with both adults and peers.

Similarly, Jean Piaget's theory of cognitive development explains that children aged 2–7 years are in the preoperational stage (Papalia, 2008). At this stage, children are highly curious, eager to accept challenges, and enthusiastic about engaging in physical and exploratory activities. Around the age of five, children frequently ask numerous questions, reflecting their strong interest in discovering and understanding the reality of the world around them (Santrock, 2007). Piaget further argued that cognitive development occurs when children actively construct knowledge through exploration and interaction with their physical and social environments (Lefa, 2014).

Within the Project Approach, children are provided with opportunities to explore and extend their existing knowledge through meaningful project tasks, whether completed individually or collaboratively. Solving project-based problems requires not only passive listening but also active engagement, such as observing, seeking information from various sources, and performing hands-on activities that involve multiple senses. Such active participation fosters enjoyment and enthusiasm in learning. Enjoyable learning experiences, in turn, serve as an effective means of enhancing children's learning motivation.

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Jean Piaget's theoretical perspective can be applied to early childhood education through the use of a constructivist approach. Piaget argued that children learn most effectively when they are actively engaged in the learning process and independently seek solutions to problems (Santrock, 2007). Children achieve deeper and more meaningful learning when they construct their own knowledge through experimentation and hands-on practice, rather than merely imitating the teacher or engaging in rote memorization.

According to Hargreaves (1998), children's engagement in project work is often accompanied by increased self-confidence, a sense of satisfaction, and feelings of enjoyment and enthusiasm. When knowledge and skills are acquired within meaningful contexts that provide ample opportunities for application, learners are more likely to develop positive dispositions toward deepening their understanding and utilizing those skills effectively.Conversely, without meaningful opportunities for application, such dispositions may gradually weaken (Talbert, 2006). Thus, the integration of authentic and contextualized learning experiences plays a crucial role in sustaining motivation, competence, and long-term engagement in learning.

Lev Vygotsky's sociocultural theory further strengthens the theoretical foundation of the Project Approach. In practice, the Project Approach is implemented through active and collaborative learning processes. Vygotsky argued that children use speech not only for social communication but also as a cognitive tool to assist them in completing tasks and regulating their thinking (Santrock, 2007). Although children actively construct their own knowledge, higher mental functions develop through social interaction. Children acquire more systematic, logical, and rational concepts as a consequence of dialogue with more knowledgeable others, such as teachers or peers. In this regard, the Project Approach supports cognitive development by encouraging collaborative inquiry and guided participation. Moreover, the Project Approach fosters a sense of classroom community when children are directly involved in group investigations and collective representations of topics that genuinely interest them. Project topics can be intentionally selected to engage children who may typically be reluctant to participate. The extended duration of project work provides sustained opportunities, particularly for children at risk of academic difficulties, to understand concepts through play, representation, and the practice of related skills (Beneke and Ostrosky, 2015). When children collaborate to represent and present their findings, they learn to appreciate one another's abilities and contributions. Such collaborative engagement not only enhances cognitive development but also strengthens social competence and mutual respect within the learning community.

The effectiveness of the Project Approach in enhancing learning increases when children possess prior experience and skills related to collaboration and cooperation, problem-solving, giving and receiving feedback, working as part of a team, and remembering and sharing information. The knowledge, skills, and dispositions required for group work within project-based activities are closely associated with the development of key competencies, particularly personal and social abilities. In addition to the theoretical foundations proposed by earlier scholars, a related approach was further developed by William H. Kilpatrick, widely known for introducing the *Project Method*. Kilpatrick, a follower and admirer of John Dewey, expanded Dewey's ideas into a structured instructional model centered on purposeful activity. Kilpatrick's Project Method is recognized as a dynamic and flexible learning model that helps children understand the world around them in logical, concrete, and active ways. This approach encompasses the planning and resolution of meaningful problems, enabling children to engage in a variety of learning activities, such as recording, constructing, observing, reviewing, collecting data, drawing conclusions, and

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synthesizing findings. Through these processes, children actively construct knowledge and deepen their understanding through experiential engagement.

Procedure of the Project Approach

Project work generally consists of three phases. In the first phase, the teacher selects or facilitates the selection of a topic, and children share what they already know about it. The direction of the investigation is then determined based on the questions children wish to explore and the learning goals to be achieved. In the second phase, children engage more deeply with the topic through activities such as field visits, interactions with experts, systematic observations, and investigations designed to answer their questions. This phase emphasizes active inquiry and sustained exploration. In the third phase, teachers and children reflect on what has been learned throughout the project. The project is then concluded with a culminating event or peak activity that allows children to present and celebrate their findings (Ruiz and Furtak, 2007). More specifically, the stages of implementing a project-based program can be described as follows:

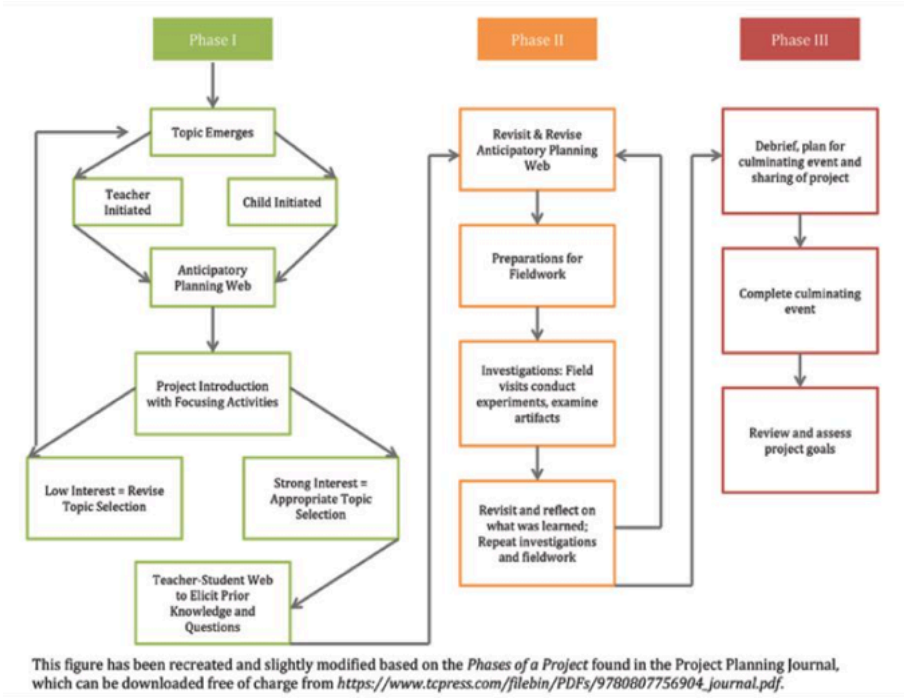

Figure 1. Phases of the Project Approach

Phase 1 - Getting Started *(Initiating the Project)*

At the initial stage of the project, the teacher invites children to participate in discussions related to the selected topic. This stage provides an opportunity to identify the children's prior experiences and existing knowledge concerning the topic. Through this process, children share their experiences and demonstrate their understanding of key concepts associated with the subject under investigation. During this phase, the teacher also communicates with parents regarding the project topic that will be explored at school. Such collaboration ensures alignment between school activities and discussions that may occur at home, thereby creating continuity and reinforcement of learning across contexts.

Phase 2 - Investigation *(Investigation)*

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The second phase is Sconstitutes the core investigative stage, during which the project is developed in greater depth. This phase provides children with opportunities to actively carry out their investigations and communicate their ideas and findings in more detailed ways. During this stage, the teacher provides various resources to support the investigative process, including real objects, books, and other relevant materials that facilitate project implementation. Rather than delivering content through direct instruction, the teacher offers guidance and suggestions regarding appropriate methods of inquiry, allowing children to conduct investigations in a natural and developmentally appropriate manner. At this stage, each child may engage in different tasks or explore distinct aspects of the topic, resulting in diverse learning experiences. These differences become evident when children present and elaborate on what they have accomplished. Ultimately, this phase serves as an opportunity for children to seek and discover answers to their own questions through active exploration.

Phase 3 - Project Conclusion *(Closing the Project)*

The third phase represent the completion stage of the project. At this stage, children are provided with opportunities to share their learning experiences and communicate what they have discovered with others. This phase serves as a reflective conclusion in which children consolidate and articulate their understanding of the topic. Teachers may guide children in recounting their experiences and presenting their findings. Children can be supported in expressing their learning through storytelling, role-play, visual displays, or other creative forms of representation. During the project exhibition or culminating event, children may present their work to classmates, teachers, and parents.

2. METHODS

This study employed a qualitative research method. Qualitative research is a strategy aimed at exploring meaning, understanding, concepts, characteristics, symptoms, symbols, and descriptions of a particular phenomenon. It is characterized by a naturalistic and holistic orientation, a focus on quality, the use of multiple methods, and the presentation of findings in narrative form (Sidiq, 2019). Specifically, this research adopted a descriptive-analytic approach. The data were described using descriptive statistics and were interpreted in depth to examine the knowledge of PAUD educators regarding project-based learning in the Jabodetabek area. Data were collected through interviews, responses to Google Forms questionnaires, and documentation. The data analysis process followed the stages of data reduction, data display, and conclusion drawing.

3. RESULTS AND DISCUSSION

Based on the results of interviews and the distribution of Google Forms questionnaires administered to 18 PAUD educators in Jabodetabek area, the majority of respondents reported having more than ten years of teaching experience (see Figure 2).

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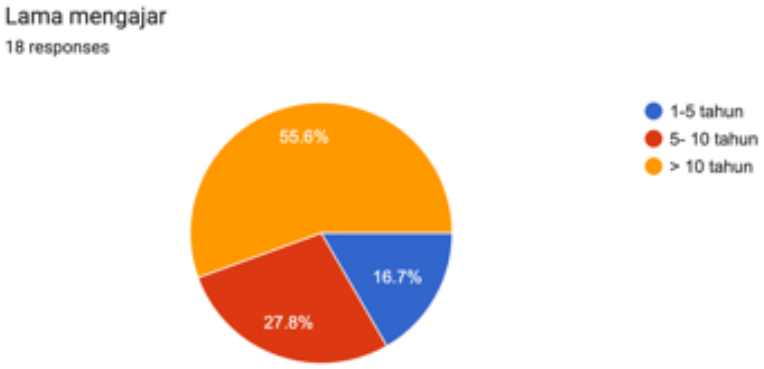

Figure 2. Teaching Experience (*Lama Mengajar*)

Regarding the level of knowledge, as presented in Figure 3, the findings indicate that PAUD educators generally demonstrate a high level of awareness of the project-based learning model. Specifically, 50% of the respondents reported that they are familiar with the project-based learning model and have implemented it in their instructional practices. Meanwhile, 44.4% indicated that they are familiar with the model but have not yet applied it within their respective PAUD institutions. Only 5.6% of respondents were categorized as having a low level of knowledge, as they reported being unfamiliar with the project-based learning model.

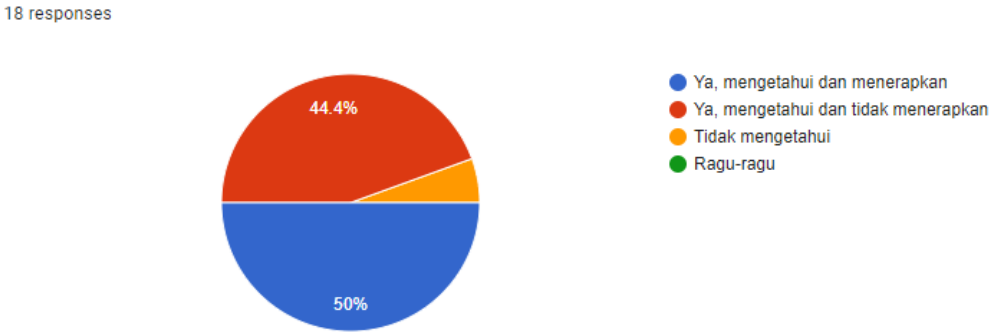

Figure 3. Level of Knowledge

Based on results interview, PAUD educators reported that information regarding project-based learning was obtained from various sources. As shown in Figure 4, the primary source of knowledge was training or workshops (44.4%), followed by lectures (27.8%), webinars or seminars (16.7%), and colleagues or peers (11.1%). These findings suggest that professional development activities play a significant role in shaping educators' understanding of project-based learning. Furthermore, PAUD educators demonstrated an understanding of the three main phases of project-based learning, namely: (1) the initiation phase (pre-development activities), (2) the investigation phase (project development), and (3) the concluding phase (project closure). PAUD educators also described project-based learning as an innovative instructional approach that promotes productive learning processes, supports the holistic development of children, emphasizes child-centered learning, and positions the teacher as a facilitator rather than a sole source of knowledge.

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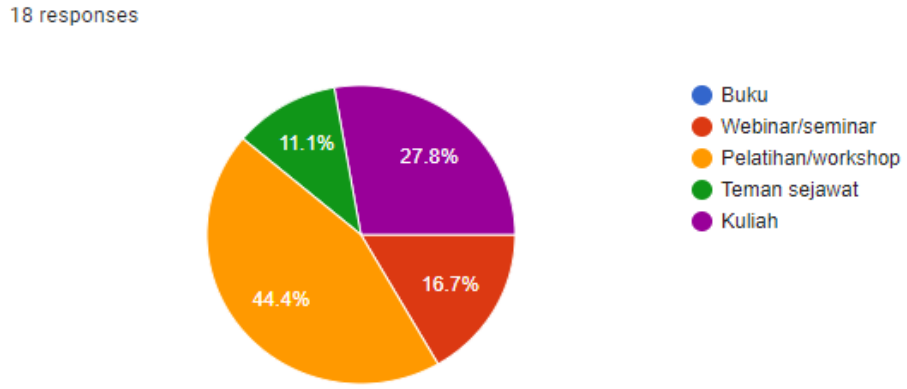

Figure 4. Sources of Information on the Project-Based Learning Model

Project-Based Learning as a Learning Innovation

Based on the interview findings regarding PAUD educators' knowledge of project-based learning, the results indicate that educators perceive project-based learning as an innovative instructional approach. Innovative learning is designed to address contemporary challenges encountered in the classroom by adapting to the specific conditions of the class and the developmental characteristics of children, thereby enhancing the overall quality of learning (Song, 2018). As explained by Brownell *et al.* (2006), each child has unique needs and learns in different ways. Therefore, innovative instructional practices must be responsive to children's individual characteristics to ensure that each child's right to independent learning is respected and supported.

In the context of PAUD, independent learning is often interpreted as independent play. Consequently, activities provided to children should take the form of enjoyable and meaningful play experiences. Marlina *et al.* (2020) argue that facilitating independent learning through play is essential to ensure that children's potential is fully explored and that all aspects of their development are optimally stimulated. Indeed, the principle of independent learning constitutes a foundational basis for educational innovation. One element learning that can innovatively adapted—particularly in response to changing educational contexts such as the pandemic—is the implementation of approaches aligned with the Merdeka Curriculum, including project-based learning. A key element of project-based learning is that children are given opportunities to explore and extend their knowledge through meaningful project tasks, which may be completed individually or collaboratively. Solving project-based problems requires more than passive listening to teacher explanations; it involves active engagement in observing, seeking information from various sources, and performing hands-on activities that engage multiple senses. Such experiences foster enjoyment and enthusiasm in learning.

Project-Based Learning as a Creation-Oriented Approach

The Project Approach, also known as project-based learning, refers to an in-depth study of real-world topics. Teaching strategies associated with this approach are designed to help children develop a more complete understanding of the world around them (Darling, 2017). Through collaborative projects, children research and explore various methods of representing newly acquired information. When children study topics in depth, they apply language and mathematical skills as they construct new understanding in areas such as science and social studies. Another key finding PAUD educators indicates that project-based

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learning is perceived as an approach that produces tangible creations or product. This perspective aligns with Wong (2004), who explains that to fosters learnenrs' abilities to produce contextual creations—whether individually or in groups—the use of project-based learning is highly recommended. Amelia and Aisya (2021) further describe that the design of project activities involves several structured steps, including: identifying the tasks to be carried out individually or in small teams; determining the expected outcomes of each activity; outlining the procedures required to complete each component of the work; identifying necessary materials and tools; and integrating these activities to produce a final creation aligned with the intended learning objectives. In practice, teachers implementing project-based learning often utilize materials readily available in the children's environment, such as coconut leaves, purun grass, or pandan leaves, which can be transformed into creative works initiated by the children's own ideas. Through such project-based activities, children's imaginative capacities are enhanced, as they are given the freedom to think creatively, design original products, and generate creations that may not have been previously conceived. By utilizing accessible materials—like coconut leaves, *purun* or pandan leaves—children are encouraged to develop imagination, creativity, and innovation in meaningful and contextually relevant ways.

Project-Based Learning as a Holistic Developmental Approach

Early childhood represents a critical period for the development of all aspects of a child's growth. According to PAUD educators' perspectives, project-based learning supports the holistic development of children, encompassing physical-motor, intellectual, moral, emotional, social, language, cognitive, and creative domains. This approach provides rich and meaningful learning experiences for young children. It creates opportunities for the development of both knowledge and skills through authentic engagement. New learning experiences emerge when children's curiosity is stimulated, and they begin to investigate topics of interest. Rather than receiving answers solely through theoretical or verbal explanations from the teacher, children are encouraged to pursue goals that enable them to discover answers independently and construct new knowledge through the projects they undertake.

Early childhood is also a foundational stage for developing communicative competence. During this period, children begin to develop abilities in representation, categorization, and problem-solving. Through the Project Approach, literacy- and numeracy-related skills naturally evolve as children engage in investigative processes. Arone *et al.* (2011) highlight that children's experiences are characterized by intellectual curiosity and an emerging desire to explore their environment. They are intrinsically motivated to develop and utilize various related skills, including reading and writing (Boyacı and Güner, 2018). It is therefore essential that children are provided with opportunities to actively experience and participate in meaningful learning processes. The Project Approach primarily aims to engage children's thinking processes, including the development of aesthetic sensitivity, moral awareness, and broader intellectual capacities. In line with this perspective, Ilyas *et al.* (2023) explain that project-based learning serves as an effective method for providing appropriate stimulation to optimize all aspects of child development.

Project-Based Learning as Child-Centered Learning with the Teacher as Facilitator

The principle of independent learning serves as a foundational basis for educational innovation, including the implementation of child-centered learning approaches. In this study, respondents (94.4% of PAUD educators) stated that project-based learning is both

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appropriate and enjoyable for children. This perception arises from the understanding that project-based learning is inherently child-centered, with its core element being activities that originate from children's own ideas and interests: idea/*prakasa* activity originated from children, children choose material and decide alone what do you want done, children express ingredient by active with whole senses, children find because consequence through experience direct with object, and children chance for tell their experience.

Figure 5. PAUD Educators' Perception of Project-Based Learning for Children

Planning of the Project-Based Learning Model

PAUD educators implement various strategies when planning the project-based learning model. In many cases, planning is conducted collaboratively between teachers and children to foster a sense of ownership of the project among learners. The planning process typically includes establishing agreed-upon rules, selecting activities that support the investigation of essential questions, integrating multiple learning domains, and identifying the tools and materials required to complete the project. Some teachers reported developing concept maps, organizing and structuring project topics, determining the project scope, establishing specific criteria for project implementation, and arranging field visits aligned with the selected topic. In principle, project-based learning planning ideally begins with children's involvement in decision-making processes, including identifying problems, designing projects, determining evaluation strategies, presenting findings, and completing the project cycle.

Based on the diversity of responses provided by PAUD educators, it can be concluded that their level of knowledge regarding the planning of the project-based learning model falls within the high category. This conclusion is supported by the variety of planning strategies described, most of which reflect a sequence consistent with the established phases of project-based learning. Regarding topic determination, responses varied: three educators stated that children determine the topic, while five indicated that the teacher selects the topic. Furthermore, educators' understanding of the phases of the project-based learning model also differed. Seven educators identified three phases, seven identified four phases, and four identified two phases. According to Kefi *et al.* (2022), the project-based learning model consists of three primary phases: project initiation, investigation, and conclusion.

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Figure 6. Determinant of Topics in Project-Based Learning

In terms of the project duration, PAUD educators provided varied responses. Some stated that project activities may last for a few weeks, while others mentioned that the duration depends on the topic discussed and learning activities conducted by the students. Several respondents indicated that project may last for at least one month based on the selected theme, while others emphasized that the duration should be adjusted to children's needs and curiosity. In kindergarten practice, some educators reported allocating one learning day consisting of 3 x 60 minutes for a project topic per week. Other responses included 90-minute sessions, more than two hours of activity, or continuing the project until the problem being investigated is resolved.

Regarding the teacher's role in learning projects, PAUD educators generally identified the teacher as a facilitator. In addition to facilitating learning, teachers are responsible for planning and designing learning activities, developing appropriate learning strategies, managing interactions between teachers and students, recognizing the uniqueness of each learner, and conducting assessments. The knowledge of PAUD educators regarding the planning of project-based project also revealed similarities with center-based learning approach. Educators reported that teachers and children discuss and determine project topics and play rules together, teachers develop concept maps, prepare learning media, formulate guiding questions, design project plans, create schedules, monitor students' activities, evaluate project outcomes, and assess children's learning experiences. This is consistent with the explanation of Shernoff *et al.* (2017), which states that project-based learning planning consists of three main components: 1) preparation planning, which includes notes prepared by teachers to organize the tools and materials needed for project-based learning; 2) implementation planning, which provides guidelines for structuring the activities that students will perform during the project; and 3) assessment planning, which serves as a guideline for determining the aspects that will be evaluated during the implementation of project-based learning.

4. CONCLUSION

Based on the data obtained, it can be concluded that the knowledge of PAUD educators in the Jabodetabek area regarding project-based learning is generally good. PAUD educators understand that project-based learning is an innovative learning approach that produces tangible outcomes or creation, supports the development of all aspects of children's growth, and emphasizes child-centered learning in which the educator acts as a facilitator. Project-based learning is also expected to enhance teachers' creativity in conducting teaching and learning activities. Through this approach, teachers can design meaningful

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learning experiences that encourage children to explore, investigate, and express their ideas through various project activities. Based on the results of this study, it is recommended that PAUD educators participate in training programs focused on the practical implementation of project-based learning models. Such training can help educators strengthen their understanding and skills, so that project-based learning can be effectively applied in their respective PAUD institutions.

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